Complete Summary

GUIDELINE TITLE

Assessment: prevention of post-lumbar puncture headaches. Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology.

BIBLIOGRAPHIC SOURCE(S)

Evans RW, Armon C, Frohman EM, Goodin DS. Assessment: prevention of post-lumbar puncture headaches: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. Neurology 2000 Oct 10;55(7):909-14. [52 references]

COMPLETE SUMMARY CONTENT

SCOPE

DISEASE/CONDITION(S)

Post-lumbar puncture headache

GUIDELINE CATEGORY

Prevention
Technology Assessment

CLINICAL SPECIALTY

Anesthesiology
Family Practice
Internal Medicine
Neurology
Pediatrics

INTENDED USERS

Physicians

GUIDELINE OBJECTIVE(S)

To identify risk factors that could be modified to reduce the frequency of post-lumbar puncture headaches in patients undergoing diagnostic lumbar punctures

TARGET POPULATION

Patients undergoing spinal anesthesia or diagnostic lumbar punctures

INTERVENTIONS AND PRACTICES CONSIDERED

Lumbar puncture, including the following procedural or practice variables:

1. Needle size
2. Direction of the bevel
3. Replacement of the stylet before withdrawing the needle
4. Needle design
5. Volume of spinal fluid removed
6. Duration of recumbency after the lumbar puncture
7. Increase hydration following the lumbar puncture

MAJOR OUTCOMES CONSIDERED

Frequency of post-lumbar puncture headaches in patients undergoing lumbar punctures

METHODOLOGY

METHODS USED TO COLLECT/SELECT EVIDENCE

Hand-searches of Published Literature (Primary Sources)
Hand-searches of Published Literature (Secondary Sources)
Searches of Electronic Databases

DESCRIPTION OF METHODS USED TO COLLECT/SELECT THE EVIDENCE

A literature search conducted by one of the authors served as the basis for this report. Appropriate literature was identified by MEDLINE searches back to 1966 using the following key words and phrases: post–lumbar puncture head-ache, prevention of post–lumbar puncture headache, complications of lumbar puncture, atraumatic and pencil point lumbar puncture needles, and Whitacre and Sprotte lumbar puncture needles. Additional articles were found through bibliographies of these articles and by checking pertinent textbooks. Articles deemed pivotal for making recommendations were reviewed by members of the Therapeutics and Technology Assessment (TTA) Subcommittee for the purpose of classification of

the evidence as it pertained to the recommendations at hand. Some of the background literature was also reviewed independently by the Therapeutics and Technology Assessment Subcommittee members.

NUMBER OF SOURCE DOCUMENTS

Not stated

METHODS USED TO ASSESS THE QUALITY AND STRENGTH OF THE EVIDENCE

Weighting According to a Rating Scheme (Scheme Given)

RATING SCHEME FOR THE STRENGTH OF THE EVIDENCE

Quality of evidence ratings for therapeutic modalities

Class I. Evidence provided by one or more well-designed randomized controlled clinical trials.

Class II. Evidence provided by one or more well-designed clinical studies, such as case-control, cohort studies, etc.

Class III. Evidence provided by expert opinion, nonrandomized historical controls, or reports of one or more.

METHODS USED TO ANALYZE THE EVIDENCE

Review of Published Meta-Analyses
Systematic Review

DESCRIPTION OF THE METHODS USED TO ANALYZE THE EVIDENCE

Not applicable

METHODS USED TO FORMULATE THE RECOMMENDATIONS

Not stated

RATING SCHEME FOR THE STRENGTH OF THE RECOMMENDATIONS

Definitions for Strength of Recommendations:

Type A. Strong positive recommendation based on Class I evidence, or based on overwhelming Class II evidence when circumstances preclude randomized clinical trials.

Type B. Positive recommendation based on Class II evidence.

Type C. Positive recommendation based on strong consensus of Class III evidence.

Type D. Negative recommendation based on inconclusive or conflicting Class II evidence.

Type E. Negative recommendation based on Class II or Class I evidence of ineffectiveness or lack of efficacy.

COST ANALYSIS

A formal cost analysis was not performed and published cost analyses were not reviewed.

METHOD OF GUIDELINE VALIDATION

External Peer Review

DESCRIPTION OF METHOD OF GUIDELINE VALIDATION

Not stated

RECOMMENDATIONS

MAJOR RECOMMENDATIONS

The quality of evidence ratings, I-III, and the strength of recommendations (Type A-Type E) are defined at the end of the "Major Recommendations" field.

1. Class I and Class II data in the anesthesiology literature and either Class I or Class II data in the neurology series show that smaller needle size is associated with reduced frequency of post-lumbar puncture headache (Type A). The actual choice of needle size will be influenced by balancing other considerations, such as ease of use, the need to measure pressures, and the flow rate, with the desire to prevent post-lumbar puncture headache.
2. Class I data in the anesthesiology literature show that, when using a cutting needle, ensuring that the bevel direction is parallel to the dural fibers reduces the frequency of post-lumbar puncture headaches. (Type A).
3. Class I data using a noncutting needle show that replacement of the stylet before the needle is withdrawn is associated with lower frequency of post-lumbar puncture headache. (Type A).
4. For spinal anesthesia, Class I data show that non-cutting needles reduce the frequency of post-lumbar puncture headache (Type A). However, for diagnostic lumbar punctures, the data are inconclusive.
5. Class I and Class II data have not demonstrated that the duration of recumbency following a diagnostic lumbar puncture influences the occurrence of post-lumbar puncture headache.
6. There is no evidence that the use of increased fluids prevents post-lumbar puncture headache.

Definitions:

Quality of Evidence Ratings for Therapeutic Modalities:

Class I. Evidence provided by one or more well-designed randomized controlled clinical trials.

Class II. Evidence provided by one or more well-designed clinical studies, such as case-control, cohort studies, etc.

Class III. Evidence provided by expert opinion, nonrandomized historical controls, or reports of one or more.

Strength of Recommendations:

Type A. Strong positive recommendation based on Class I evidence, or based on overwhelming Class II evidence when circumstances preclude randomized clinical trials.

Type B. Positive recommendation based on Class II evidence.

Type C. Positive recommendation based on strong consensus of Class III evidence.

Type D. Negative recommendation based on inconclusive or conflicting Class II evidence.

Type E. Negative recommendation based on Class II or Class I evidence of ineffectiveness or lack of efficacy.

CLINICAL ALGORITHM(S)

None provided

EVIDENCE SUPPORTING THE RECOMMENDATIONS

TYPE OF EVIDENCE SUPPORTING THE RECOMMENDATIONS

The recommendations are based on a review of the literature. The type of supporting evidence is identified and graded for each recommendation on the prevention of post-lumbar puncture headaches (see "Major Recommendations").

BENEFITS/HARMS OF IMPLEMENTING THE GUIDELINE RECOMMENDATIONS

POTENTIAL BENEFITS

Reduction in the frequency of post-lumbar puncture headaches

Subgroups Most Likely to Benefit:

- Younger female patients with small body mass index (between the ages of 18-30)
- Patients with headaches before the lumbar puncture
- Patients with a history of post-lumbar puncture headaches

POTENTIAL HARMS

Replacement of the stylet before withdrawing the needle: Rarely, a nerve root can herniated through the dura due to aspiration by the needle during withdrawal. There is a single case report of transection and withdrawal of a nerve filament due to replacement of the stylet (into a hollow needle with an end-hole-side-hole needle) following a lumbar myelogram. Bacterial meningitis, a rare complication of diagnostic lumbar puncture, might theoretically be caused by reintroducing a stylet contaminated with respiratory droplets. The stylet should always be used on insertion through the skin and the subcutaneous tissue whether using a Quincke or atraumatic needle. Rarely, a needle without a stylet may implant a plug of skin which can grow into an intraspinal epidermoid tumor.

QUALIFYING STATEMENTS

QUALIFYING STATEMENTS

- The statement of this guideline is provided as an educational service of the American Academy of Neurology. It is based on an assessment of current scientific and clinical information. It is not intended to include all possible proper methods of care for a particular neurologic problem or all legitimate criteria for choosing to use a specific procedure. Neither is it intended to exclude any reasonable alternative methodologies. The American Academy of Neurology recognizes that specific patient care decisions are the prerogative of the patient and the physician caring for the patient, based on all of the circumstances involved.
- Post-lumbar puncture headache has been defined in different ways. Definitions range from any headache after lumbar puncture to headache after lumbar puncture with definite characteristics – in particular, a constant headache appearing or worsening significantly upon assuming the upright position and resolving or improving significantly upon lying down. Some of the definitions used do not permit excluding possible overlap between the post-lumber puncture headache described and migraine without aura, at least in some of the patients. We elected to accept all definitions of post-lumber puncture headache uncritically, but recommend that future studies of post-lumbar puncture headache adhere to rigorous definitions that will permit excluding other etiologies of headaches. Similarly, there is no uniform definition of "severe" post-lumber puncture headache. Future studies should use established and well-defined criteria for post-lumbar puncture headache and its severity.

IMPLEMENTATION OF THE GUIDELINE

DESCRIPTION OF IMPLEMENTATION STRATEGY

An implementation strategy was not provided.

INSTITUTE OF MEDICINE (IOM) NATIONAL HEALTHCARE QUALITY REPORT CATEGORIES

IOM CARE NEED

Staying Healthy

IOM DOMAIN

Effectiveness
Safety

IDENTIFYING INFORMATION AND AVAILABILITY

BIBLIOGRAPHIC SOURCE(S)

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ADAPTATION

Not applicable: The guideline was not adapted from another source.

DATE RELEASED

2000 Oct

GUIDELINE DEVELOPER(S)

American Academy of Neurology - Medical Specialty Society

SOURCE(S) OF FUNDING

American Academy of Neurology

GUIDELINE COMMITTEE

Therapeutics and Technology Assessment Subcommittee

COMPOSITION OF GROUP THAT AUTHORED THE GUIDELINE

Committee Members: Douglas S. Goodin, MD (Chair); Elliot Mark Frohman, MD, PhD; Robert Goldman, MD; John Ferguson, MD; Philip B. Gorelick, MD, MPH; Chung Hsu, MD, PhD; Andres Kanner, MD; Ann Marini, MD, PhD; Carmel Armon, MD; David Hammond, MD; David Lefkowitz, MD; and Edward Westbrook, MD

FINANCIAL DISCLOSURES/CONFLICTS OF INTEREST

Not stated

GUIDELINE STATUS

This is the current release of the guideline.

GUIDELINE AVAILABILITY

Electronic copies: A list of American Academy of Neurology (AAN) guidelines, along with a link to a Portable Document Format (PDF) file for this guideline, is available at the AAN Web site.

Print copies: Available from the AAN Member Services Center, (800) 879-1960, or from AAN, 1080 Montreal Avenue, St. Paul, MN 55116.

AVAILABILITY OF COMPANION DOCUMENTS

- Practice statement definitions. St. Paul (MN): American Academy of Neurology.
- Practice statement development. St. Paul (MN): American Academy of Neurology.

PATIENT RESOURCES

None available

NGC STATUS

This summary was completed by ECRI on February 12, 2002. The information was verified by the guideline developer as of March 29, 2002.

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